

Niceville and Hagen's breeding records were. Here, in East Africa, we once had a classic example of the chaos that can be caused by a laboratory assistant trying to conceal casualties in his cultures. Working on the black *Charaxes*, in an attempt to work out the relationship between the various forms of female and the related males, this individual replaced

dead larvae in his broods with others collected from the bush (the larvae of several species are almost impossible to separate) and, as a result, associated separate and distinct species as members of the progeny of the same female. It took much time and trouble to sort out the resulting muddle.

P. O. Box 95617,  
MOMBASA,  
KENYA,  
July 2, 1980.

D. G. SEVASTOPULO

## 29. ROLE OF PARASITES AND PATHOGENS IN THE NATURAL CONTROL OF SAFFLOWER CATERPILLAR, *PERIGEA CAPENSIS* GUEN.

Safflower caterpillar, *Perigea capensis* Guen. (Lepidoptera: Noctuidae) is one of the most destructive pests of safflower (*Carthamus tinctorius* Linn.) and niger (*Guizotia abyssinica* Cass.) and is widely distributed throughout India (Narayanan 1961).

In Central India, the pest remains active from July to February and infests niger from July to October and safflower from October to February. During the course of investigations during 1976-77, five hymenopterous parasites namely *Apanteles ruficrus* Holiday, *Rogas percurrrens* Lyle, *Eriborus argenteopilosus* Cam, *Euplectus euplexiae* Roh. and a nematode parasite (*Mermis* sp.), nuclear polyhedral virus and a green muscardine fungus (*Metarrhizium anisopliae*) were recorded as natural enemies of the larvae of *P. capensis*. The previous records of the larval parasites of the pest are *A. ruficrus*, *R. percurrrens* (Narayanan, 1961); *Protapanteles* sp., *Heterogamus* sp., *E. euplexiae* (Ayyar, 1920); *Apanteles antipoda* (Wilkinson, 1929) and *A. fluripes*, *Chelonus munakata* (Lal, 1944). During the present studies *E. argenteopilosus*, *Habrocytus* sp.,

*Mermis* sp., nuclear polyhedral virus and fungus *M. anisopliae* were recorded for the first time on the insect.

The percentage parasitization by important parasites and pathogens is presented in Table 1.

*A. ruficrus* remained active from first week of August to first week of February and parasitized on an average 13.0 per cent larvae, with maximum of 30.7 per cent parasitization in the first week of October. *R. percurrrens* started its activity from first week of September and remained active upto first week of February, parasitizing on an average 19.0 per cent larvae during its active period. With a maximum of 42.4 per cent in the second week of November. *E. argenteoplosus* remained active only during September and October and parasitized maximum 2.0 per cent larvae in the first week of September. Two other hymenopterous parasites *E. euplexiae* and *Habrocytus* sp. have no significance in the natural control of *P. capensis* as they parasitized less than 0.5 per cent larvae only during November-December.

Nuclear polyhedral virus was the most

MISCELLANEOUS NOTES

TABLE 1

PERCENTAGE LARVAL PARASITIZATION OF *Perigea capensis* GUEN. BY IMPORTANT PARASITES AND PATHOGENS

Months/dates (Standard week)	<i>A. ruficrus</i>	<i>R. percurrens</i>	<i>E. argent-copilosus</i>	<i>Mermis</i> sp.	<i>M. anisopliae</i>	N. P. V.
July						
16-22	0.0	0.0	0.0	0.0	0.0	0.0
23-27	0.0	0.0	0.0	0.0	0.0	0.0
August						
30-5	6.7	0.0	0.0	6.7	0.0	20.0
6-12	5.6	0.0	0.0	0.0	0.0	22.2
13-19	8.3	0.0	0.0	0.0	0.0	29.2
20-26	11.5	0.0	0.0	0.0	0.0	38.5
27-2	11.1	0.0	0.0	0.0	0.0	33.3
September						
3-9	5.1	2.0	2.0	1.0	3.0	15.2
10-16	4.7	2.7	2.0	1.3	2.0	13.3
17-23	5.9	3.9	0.7	2.0	2.6	15.0
24-30	4.8	2.4	0.8	1.6	2.4	13.7
October						
1-7	30.7	10.7	0.0	2.9	3.6	21.4
8-14	29.7	9.4	1.4	1.4	2.2	20.3
15-21	29.4	8.1	0.7	0.7	2.2	18.4
22-28	23.1	38.5	0.8	0.0	1.5	17.7
November						
29-4	16.3	38.8	0.0	0.0	2.3	17.1
5-11	14.4	42.4	0.0	0.0	1.6	16.8
12-18	13.3	41.7	0.0	0.0	0.0	16.7
19-25	12.5	37.5	0.0	0.0	0.0	16.7
26-2	12.8	39.1	0.0	0.0	0.0	16.2
December						
3-9	16.2	14.3	0.0	0.0	0.0	18.4
10-16	17.5	15.0	0.0	0.0	0.0	20.0
17-23	14.3	17.1	0.0	0.0	0.0	22.9
24-31	18.2	22.7	0.0	0.0	0.0	31.8
January						
1-7	10.5	31.6	0.0	0.0	0.0	31.6
8-14	20.0	20.0	0.0	0.0	0.0	40.0
15-21	14.3	7.1	0.0	0.0	0.0	35.7
22-28	9.1	9.1	0.0	0.0	0.0	9.1
February						
29-4	16.7	16.7	0.0	0.0	0.0	0.0
5-11	0.0	0.0	0.0	0.0	0.0	0.0
Average during active period	14.16	19.58	1.05	1.56	2.34	2.97

effective agent for the natural control of the pest infecting on an average 21.8 per cent larvae during its active period from first week of August to last week of January. Maximum 40.0 per cent larval infection was observed in the second week of January. The infection of green Muscardine fungus (*M. anisoplaea*) was seen in the first week of September and continued up to second week of November with maximum 3.6 per cent infection in the first week of October. The incidence of *Mer-mis* sp. was maximum 6.7 per cent in the first week of August, although its activity

continued upto the third week of October but the incidence was low.

*A. ruficrus*, *R. percurrens* and nuclear polyhedral virus were the most potential agents for the natural control of the larvae of *P. capensis* and wiped out together 66.5 to 80.2 per cent larval population from the last week of October to last week of November.

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DEPARTMENT OF ENTOMOLOGY,  
J. N. AGRICULTURAL UNIVERSITY,  
JABALPUR-482 004,  
September 25, 1980.

K. C. PALIWAL  
S. S. JAKHMOLA

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### 30. INCIDENCE OF JOWAR ARMY WORM, *MYTHIMNA SEPARATA* (WALKER) (LEPIDOPTERA: NOCTUIDAE) ON MAIZE COBS

The army worm, *Mythimna separata* (Walker) is known to be an important defoliator of jowar. This species has also been reported to infest maize, paddy, wheat, oats and other millets (Ghosh 1924).

During the months of September-October, 1979, we observed the caterpillars of *M. separata* damaging severely the cobs of maize at the Regional Research Station, University of

Agricultural Sciences, Dharwar Campus, Karnataka. The caterpillars fed on the silk of the cob and also on the developing tender grains at the tip of the cob. The number of caterpillars per cob ranged from one to two. The percentage of damaged cobs ranged from 15.87 to 60.86 in different plots, the average being 36.62.

DEPARTMENT OF ENTOMOLOGY,  
COLLEGE OF AGRICULTURE,  
DHARWAR-580 005,  
September 3, 1980.

R. GOVINDAN  
J. S. AWAKNAVAR  
C. THIPPESWAMY  
M. C. DEVAIAH